



Maryland
Department of
the Environment

GGRA Modeling Update

This presentation does not represent any state policy positions nor does it represent a proposed state climate plan. This is a scenario specified by the MWG. It is one of several to be used to guide the state in developing a climate plan. These materials are informational only and should not be used for any other purpose.

November 13, 2018

Economic Impact of Policy Scenario Three

November 13, 2018

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What is Modeled in Policy Scenario Three?

First, Modeling Starts With the Reference Case

Reference Case

Next, All Policies From Policy Scenario One are Modeled Within Pathways

Policy Scenario One



Reference Case

From Here, Carbon Pricing Is Implemented, Leading to Further Reductions in Emissions



Finally, Revenues from the Carbon Fee are Distributed

Reinvestment of Carbon Fee Revenues



Carbon Pricing



Policy Scenario One

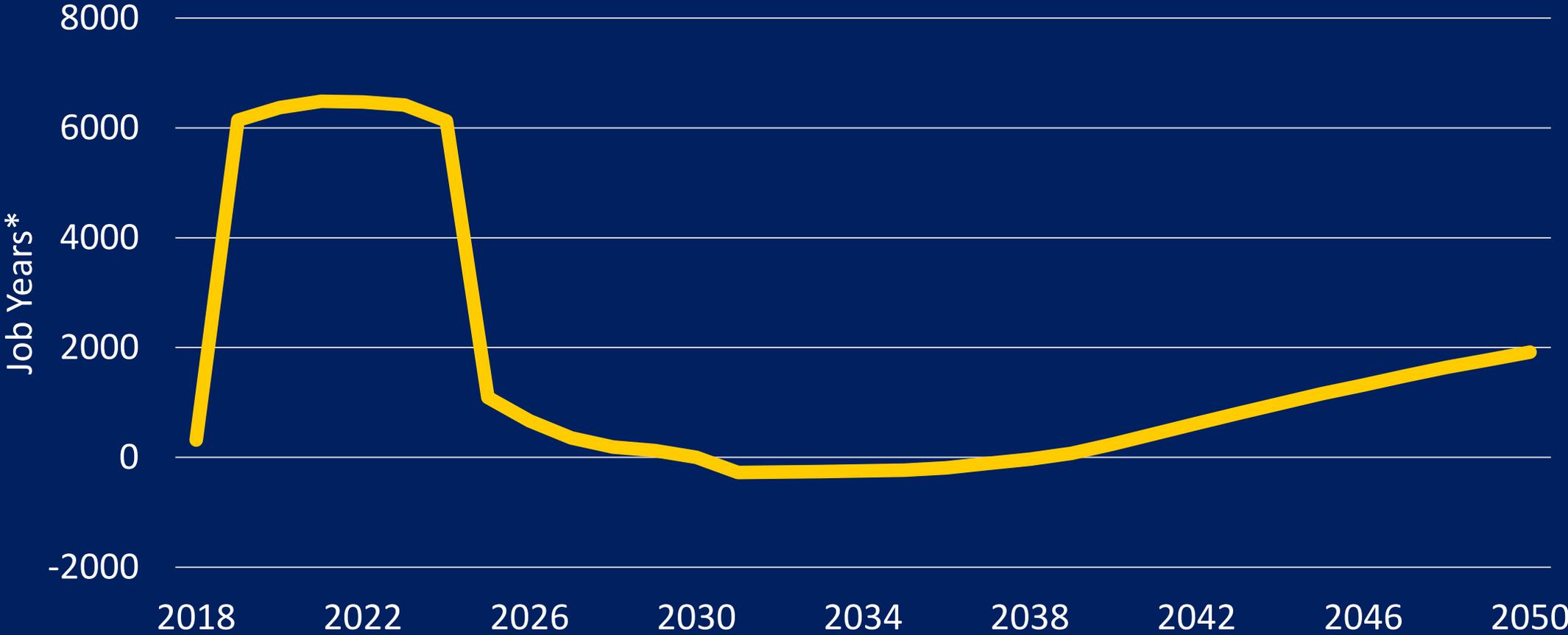


Reference Case

Policy Scenario One Recap

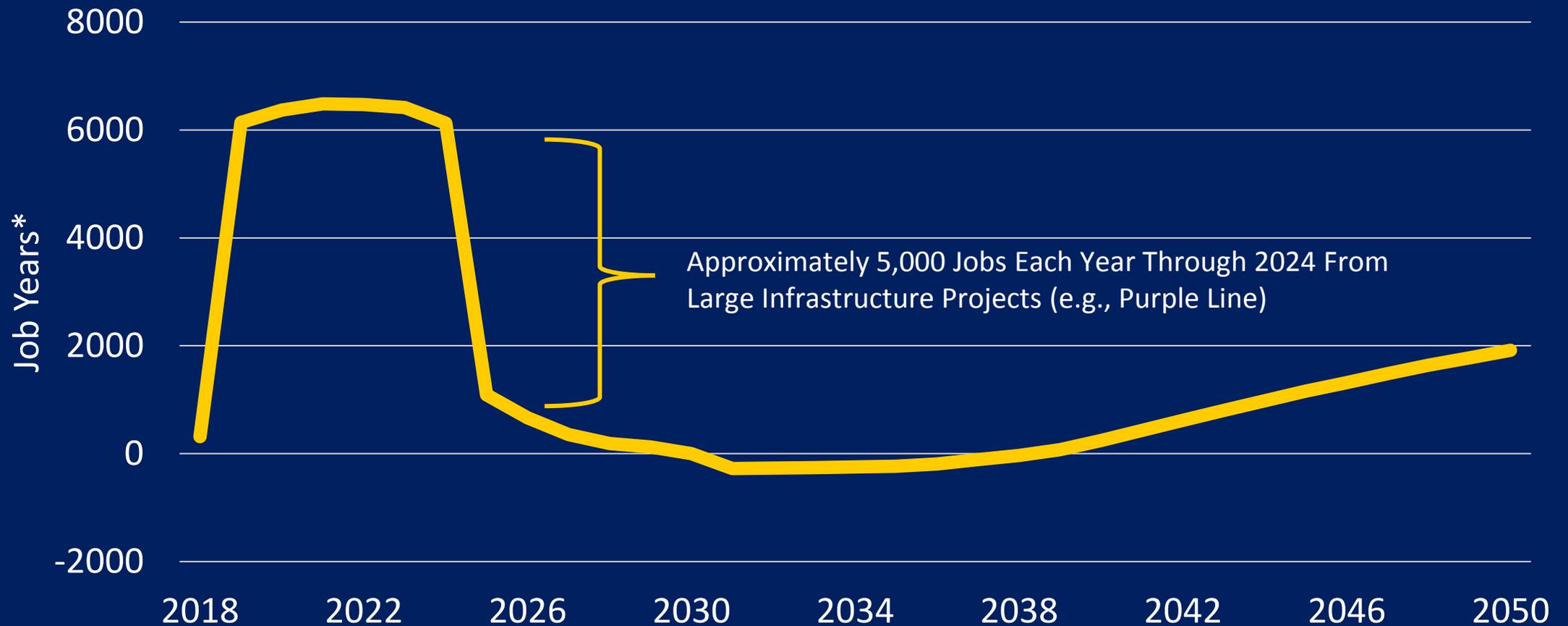
- The economic impact for Policy Scenario One has been updated to include cost data from MDOT and customized wind/solar industries.
- Policy Scenario One still meets the economic goals of the GGRA

Policy Scenario One Leads to Job Gains Relative to the Reference Case



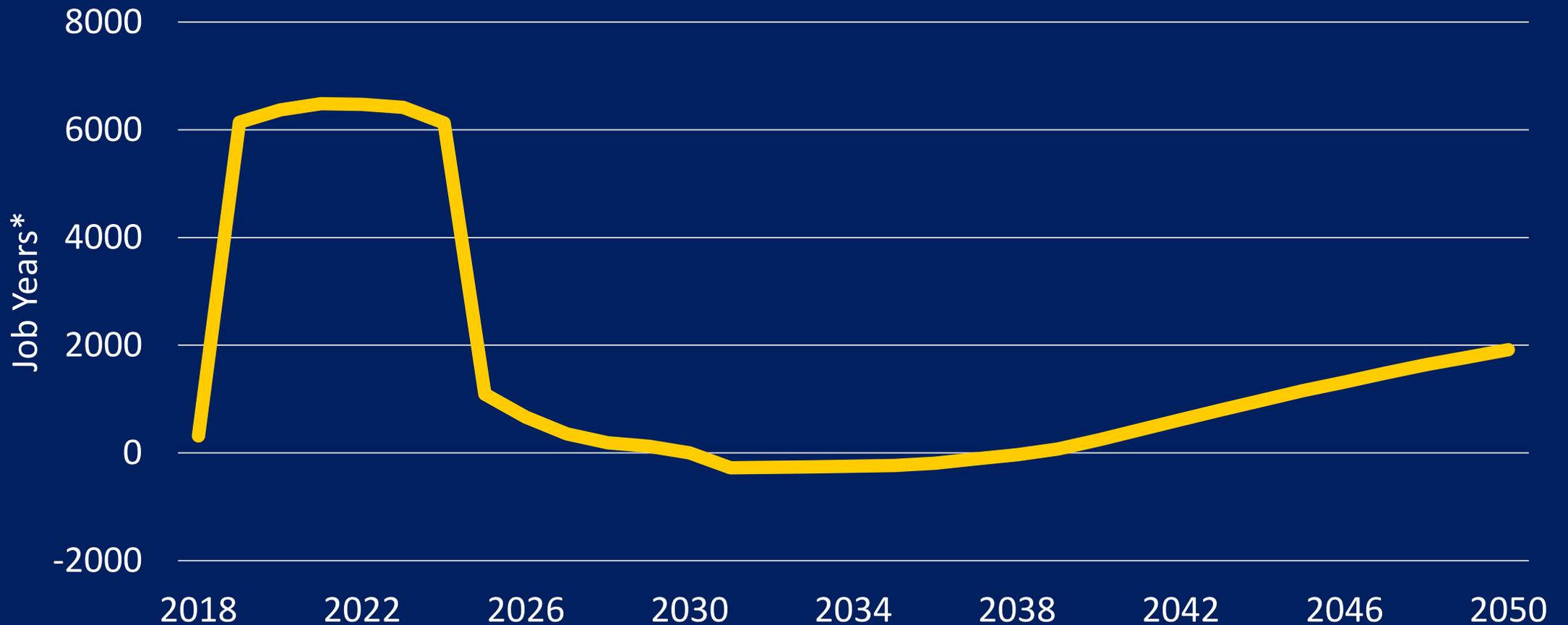
*Difference between policy scenario one and reference case

The Initial Increase in Employment Relative to the Reference Case is Due to Near-Term Investment in Transportation Measures



*Difference between policy scenario one and reference case

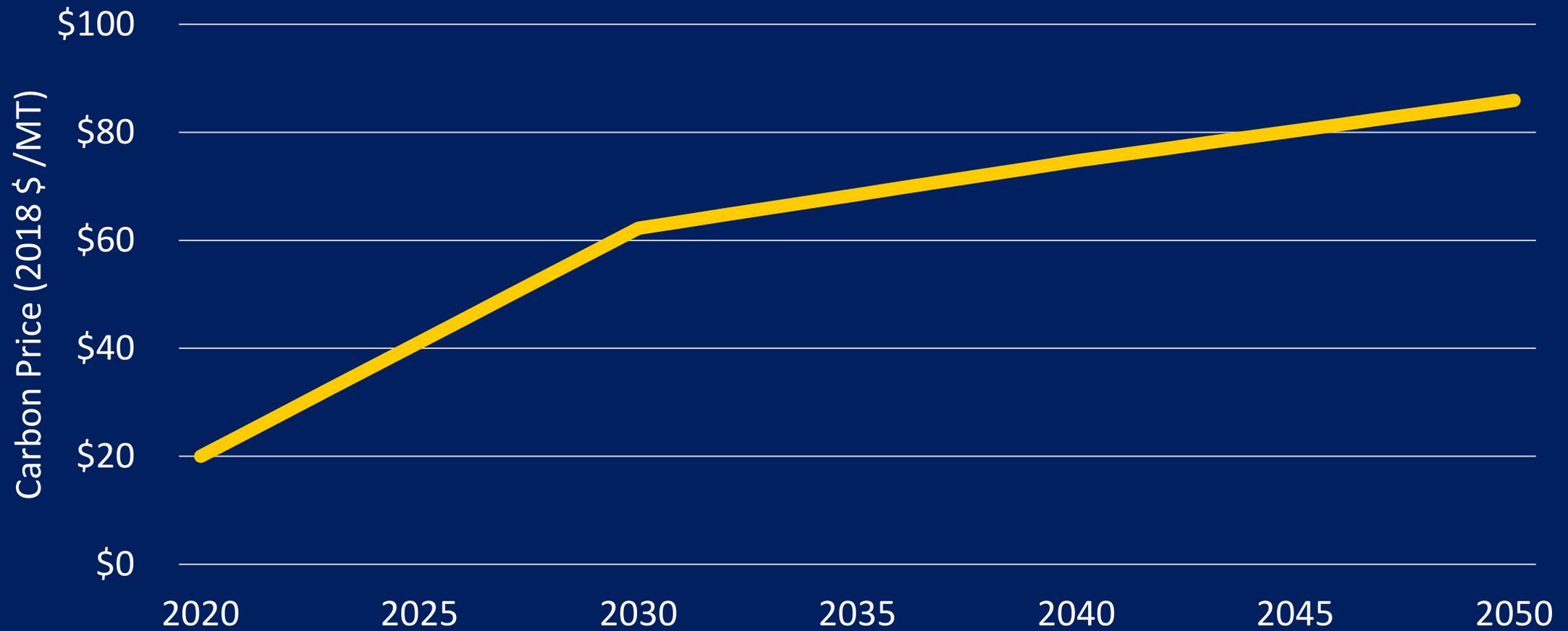
On Average, Policy Scenario One Adds 3,134 Jobs Each Year Through 2030 and 1,562 Jobs Each Year Through 2050



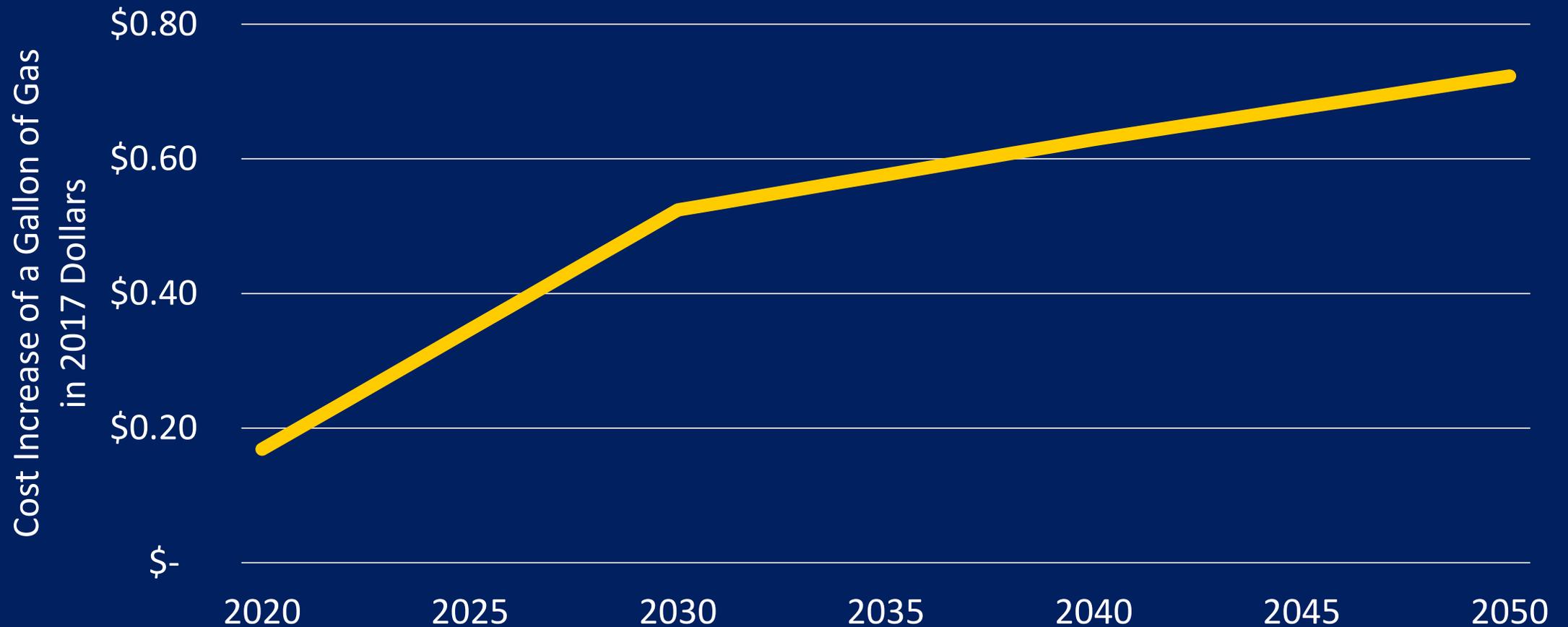
*Difference between policy scenario one and reference case

What is Happening in Policy Scenario Three?

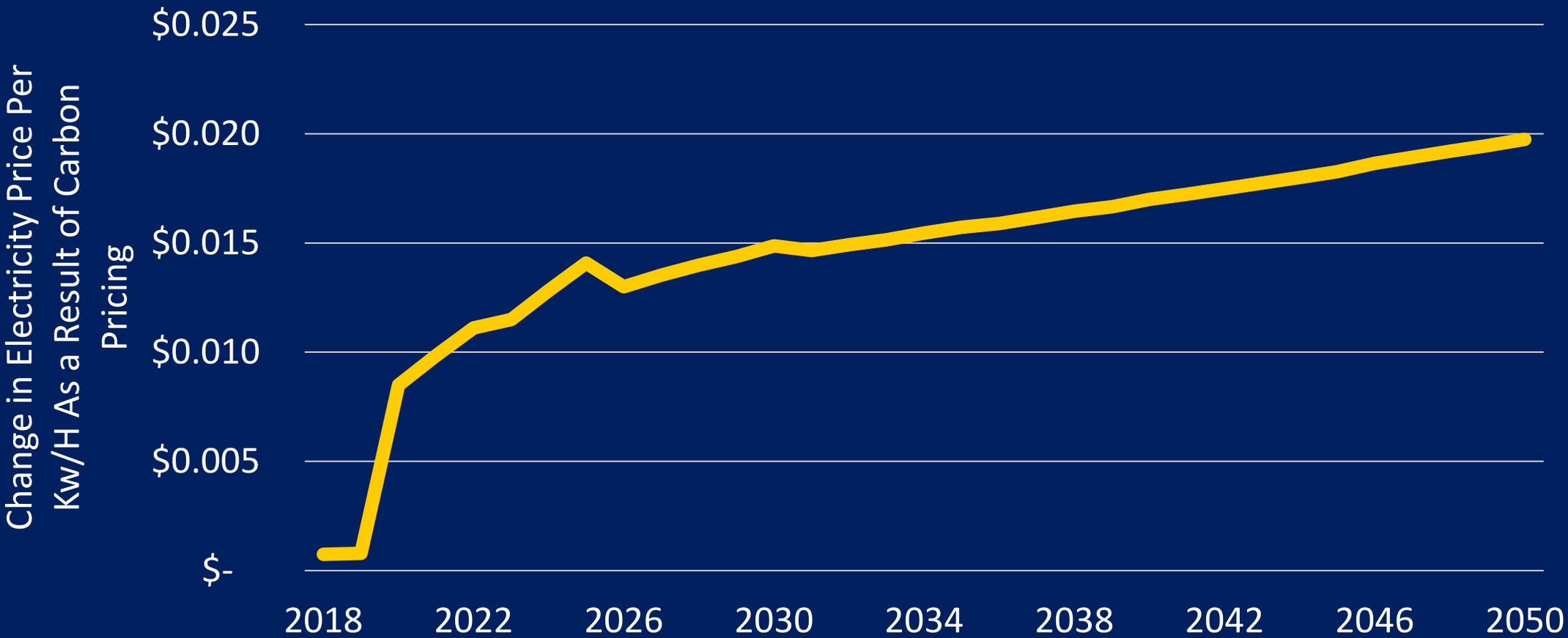
Carbon Price Set at \$20/Ton Then Rises to Social Cost of Carbon in 2030 and Beyond



The Carbon Price Increases the Cost of a Gallon of Gasoline by over 50 cents in 2030



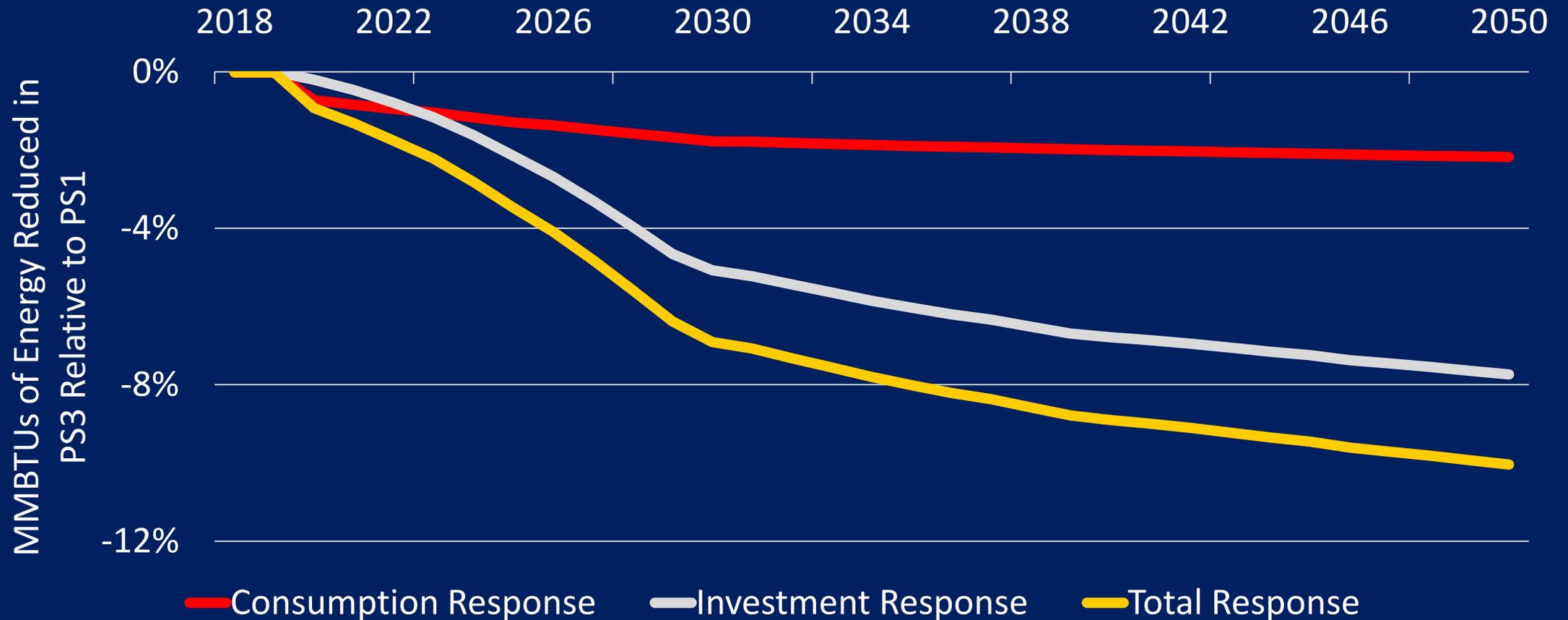
The Electricity Rate Consumers Pay Rises Steadily Post 2020



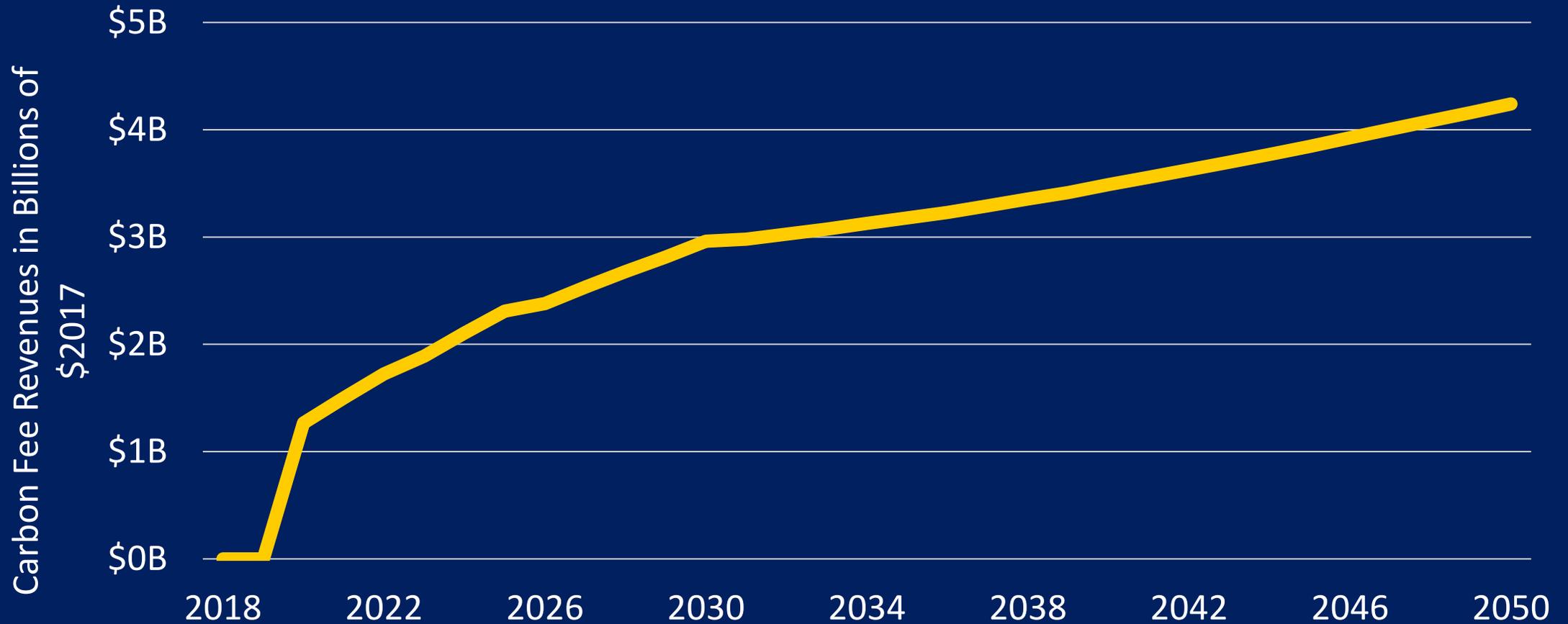
Consumers and Businesses Have Different Responses to Carbon Pricing

- Important to separate out changes in consumption from changes that happen due to investment.
- Changes from consumption are “free” while changes from investments have an associated cost.
 - For example: more money spent on efficient appliances and less money spent on all other goods.
- Elasticities from CTAM and EIA allow us to determine the relative size of consumption and investment responses

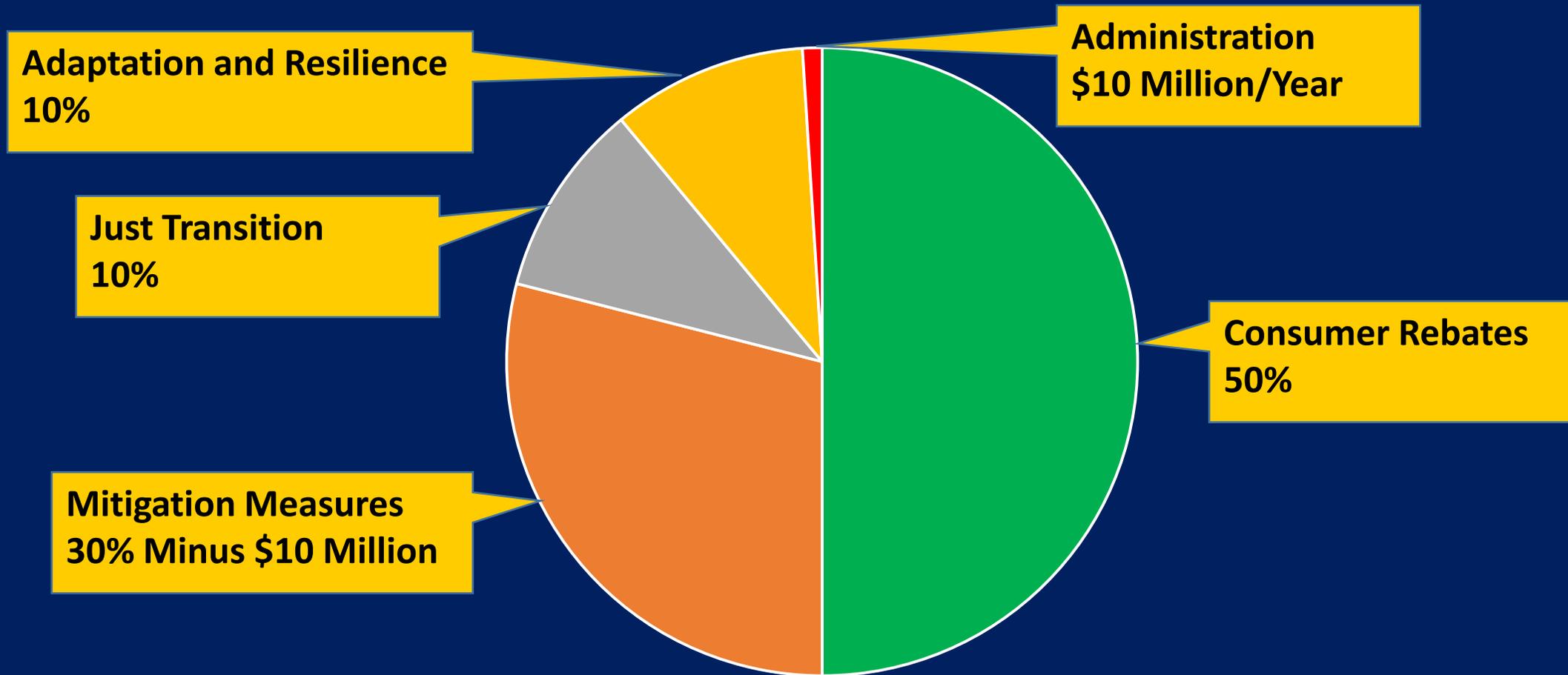
Carbon Pricing Alone Leads to an Additional 10% Reduction in Energy Consumed Relative to Policy Scenario One



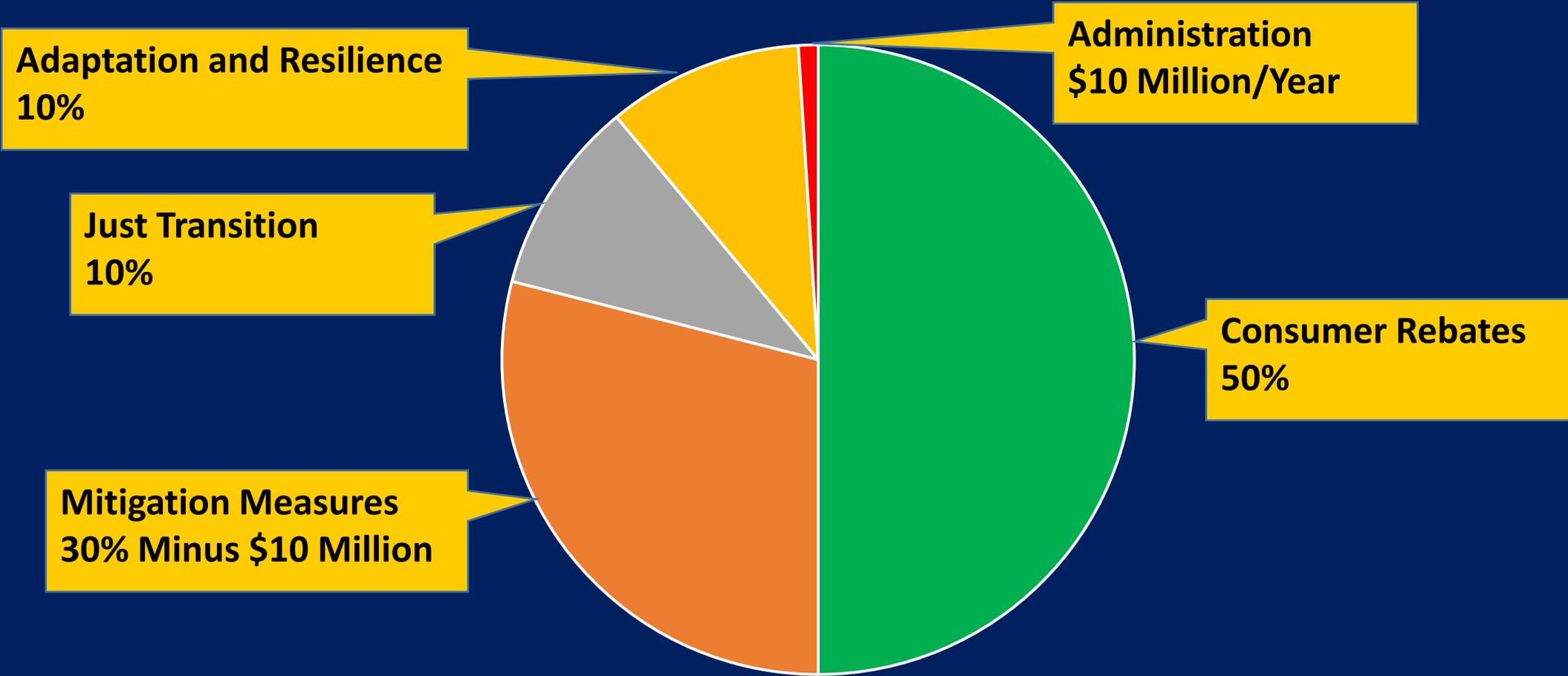
While Energy Consumption Falls, Revenue is Initially Significant, at \$3 Billion in 2030 and \$4.2 Billion in 2050



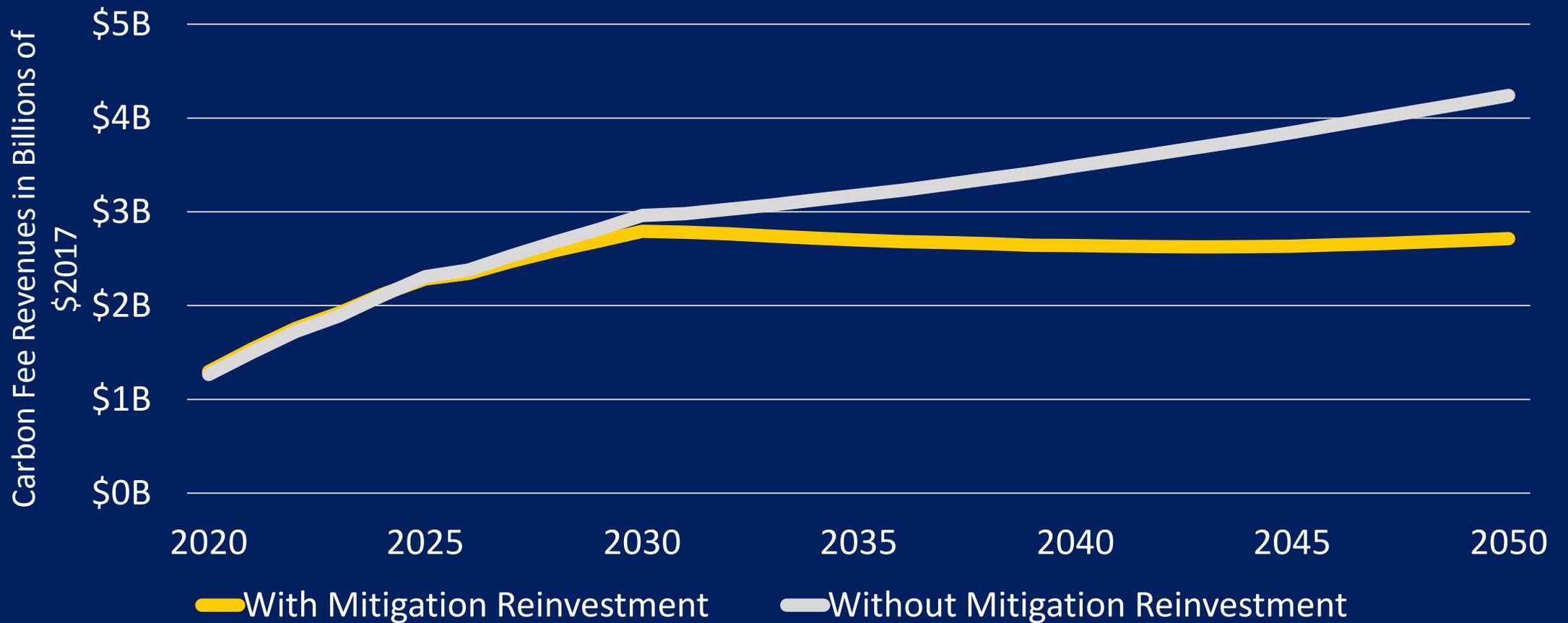
Half of All Revenues are Rebated to Consumers



Almost 30% of Revenues are Used to Further Reduce Emissions

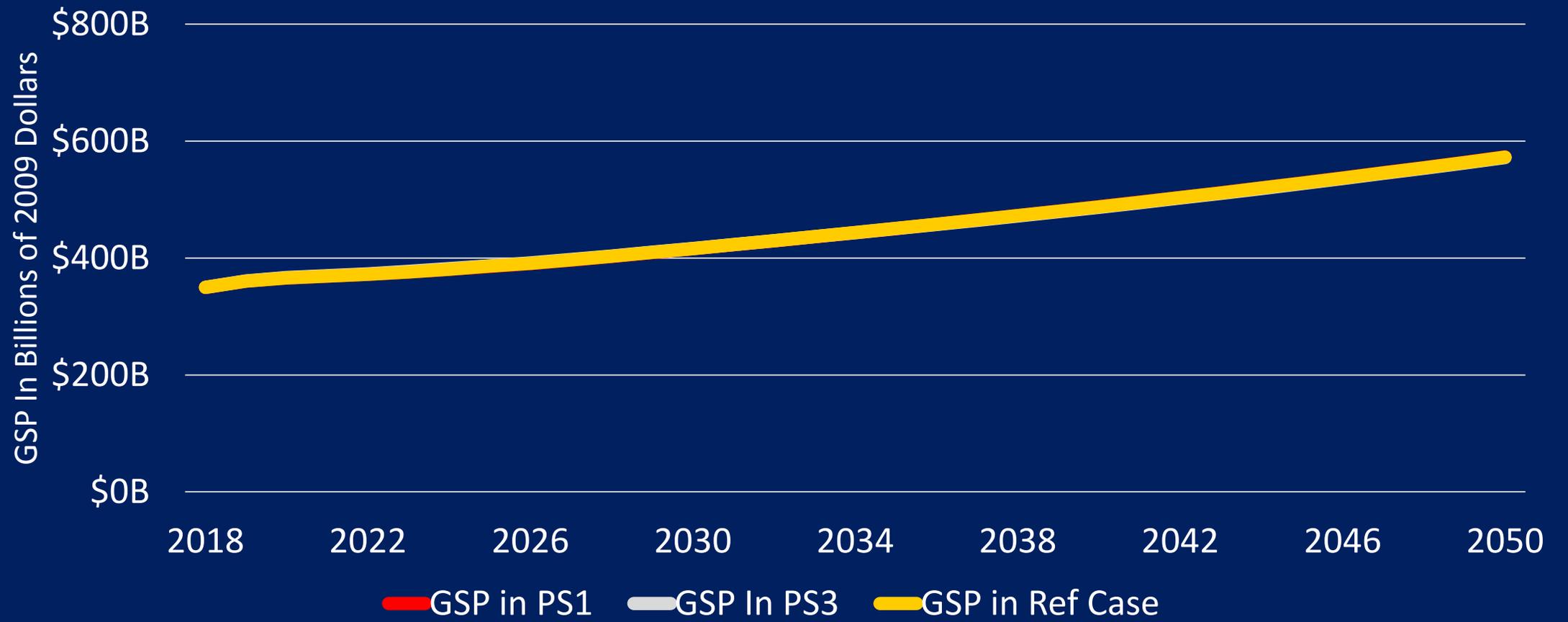


By Reinvesting Revenue into Emissions Mitigation Programs, Final Projected Revenue Falls as Total Emissions Fall

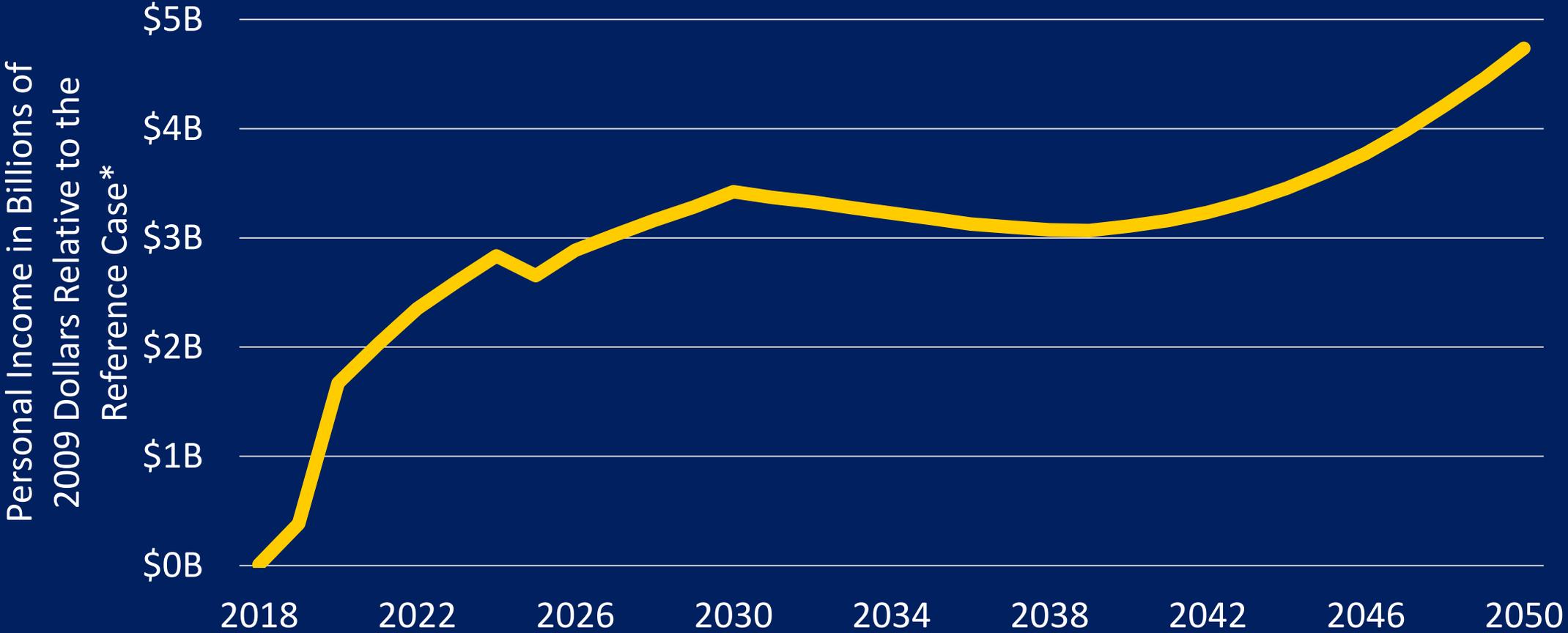


Economic Impact

In Both PS1 and PS3, Maryland's Economy Grows Year over Year and is Virtually Indistinguishable from Baseline Growth

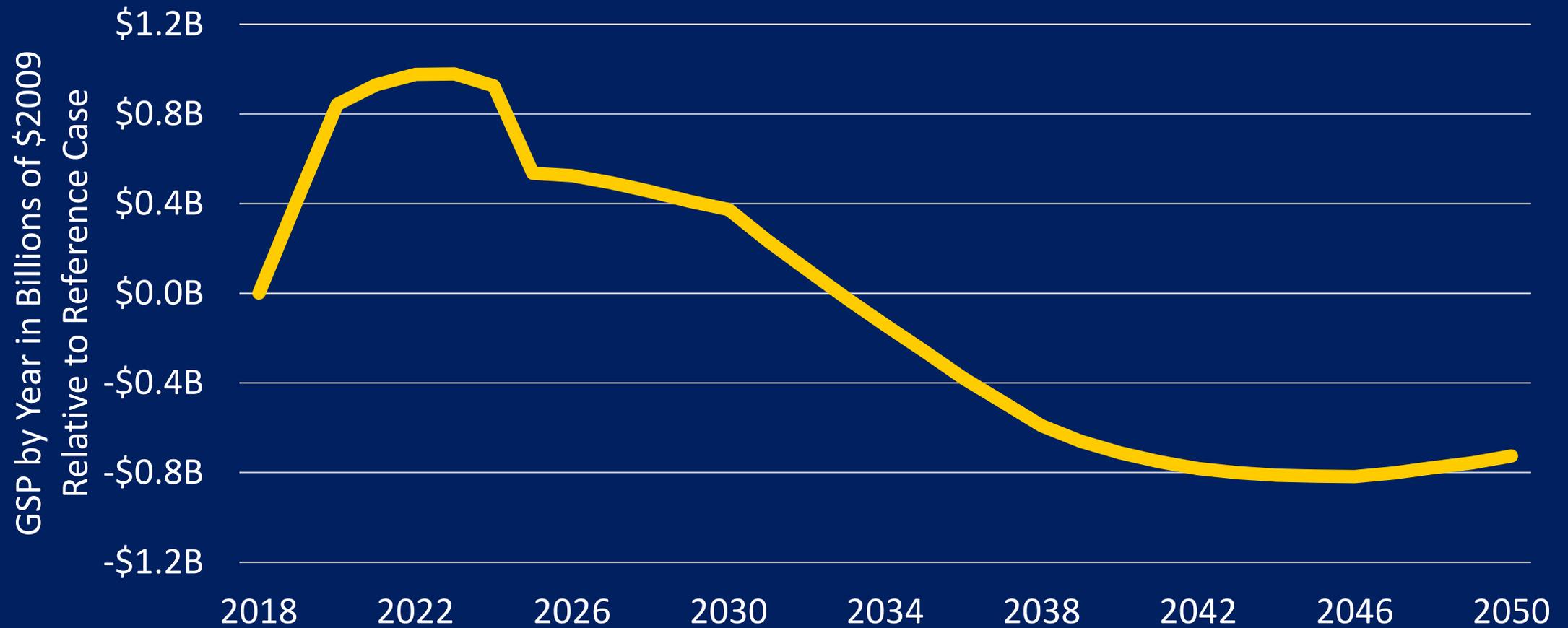


Personal Income Rises Each Year in Policy Scenario Three Relative to the Reference Case



*Difference between policy scenario three and reference case

GSP Growth is Positive Relative to the Reference Case Through 2032, and Then Decreases.

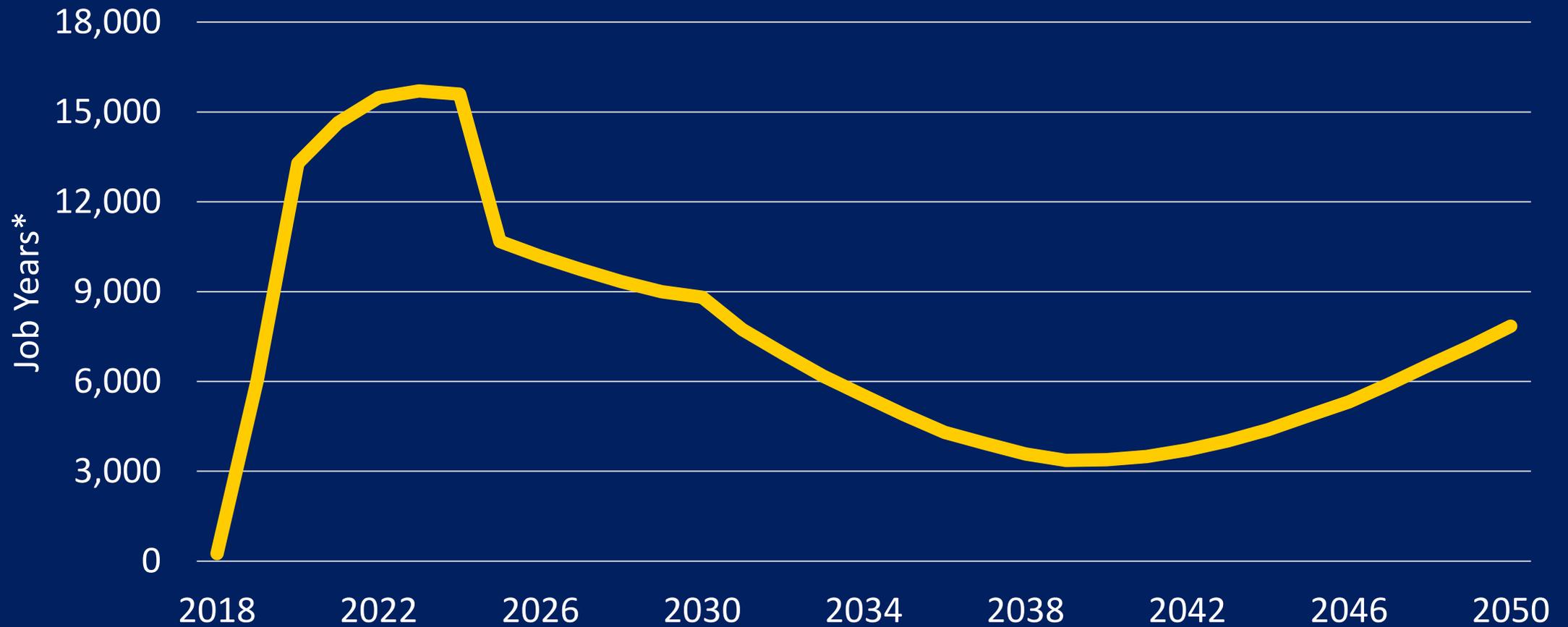


*Difference between policy scenario three and reference case

Net Present Value of GSP in Policy Scenario 3 is Higher Than in the Reference Case Through Both 2030 and 2050

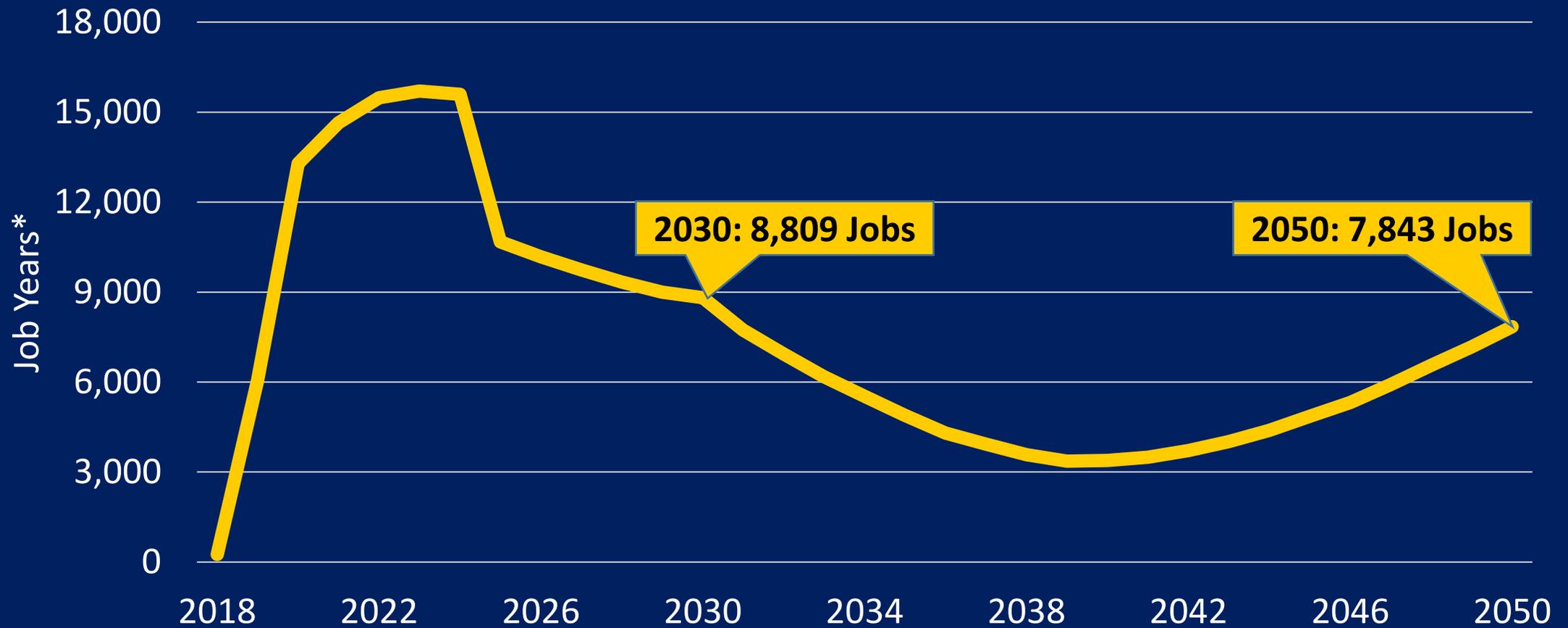
- **Cumulative GSP Growth Through 2030: \$6.7 Billion** (in fixed \$2009 with a 3% discount rate)
- **Cumulative GSP Growth Through 2050: \$1.6 Billion** (in fixed \$2009 with a 3% discount rate)

Relative to the Reference Case, Maryland Gains Jobs Each Year in Policy Scenario 3



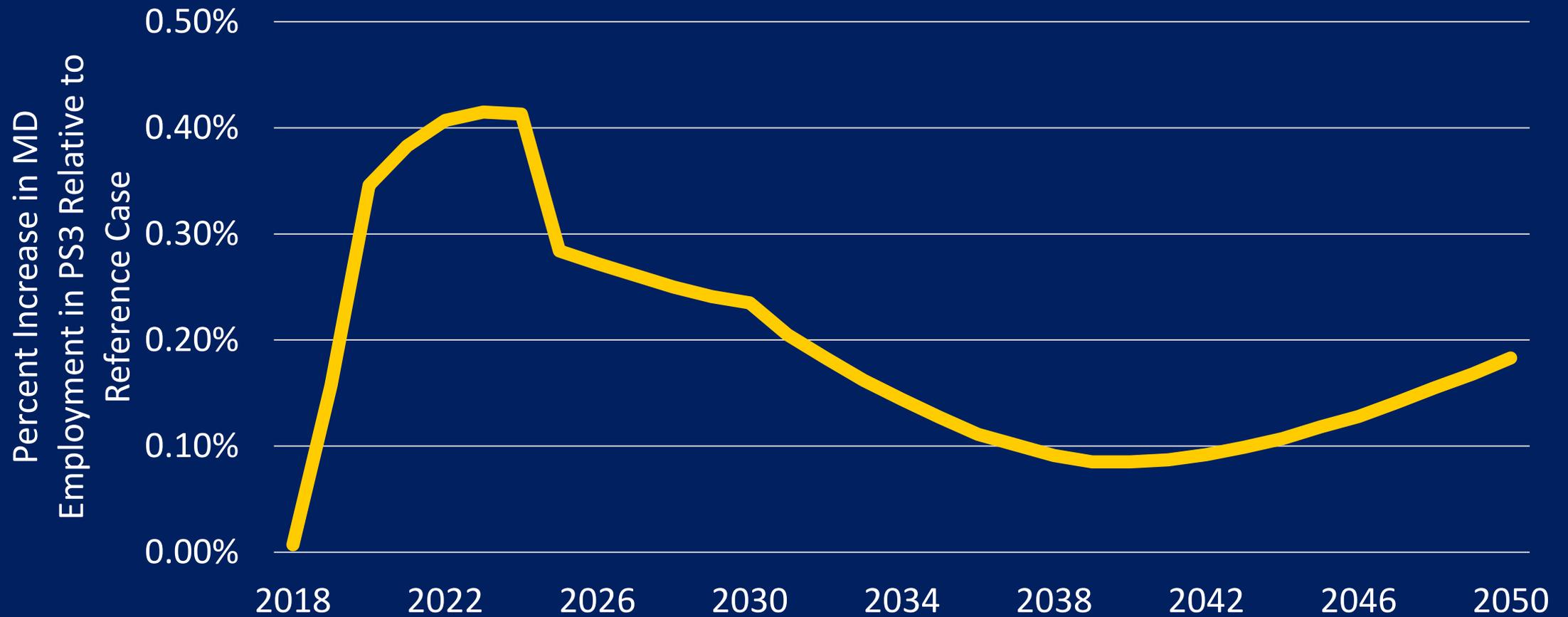
*Difference between policy scenario three and reference case

On Average Through 2030, Policy Scenario Three Leads to 10,672 More Jobs Relative to the Reference Case



*Difference between policy scenario three and reference case

While Job Gains May Appear Large, They are a Fraction of Overall Employment

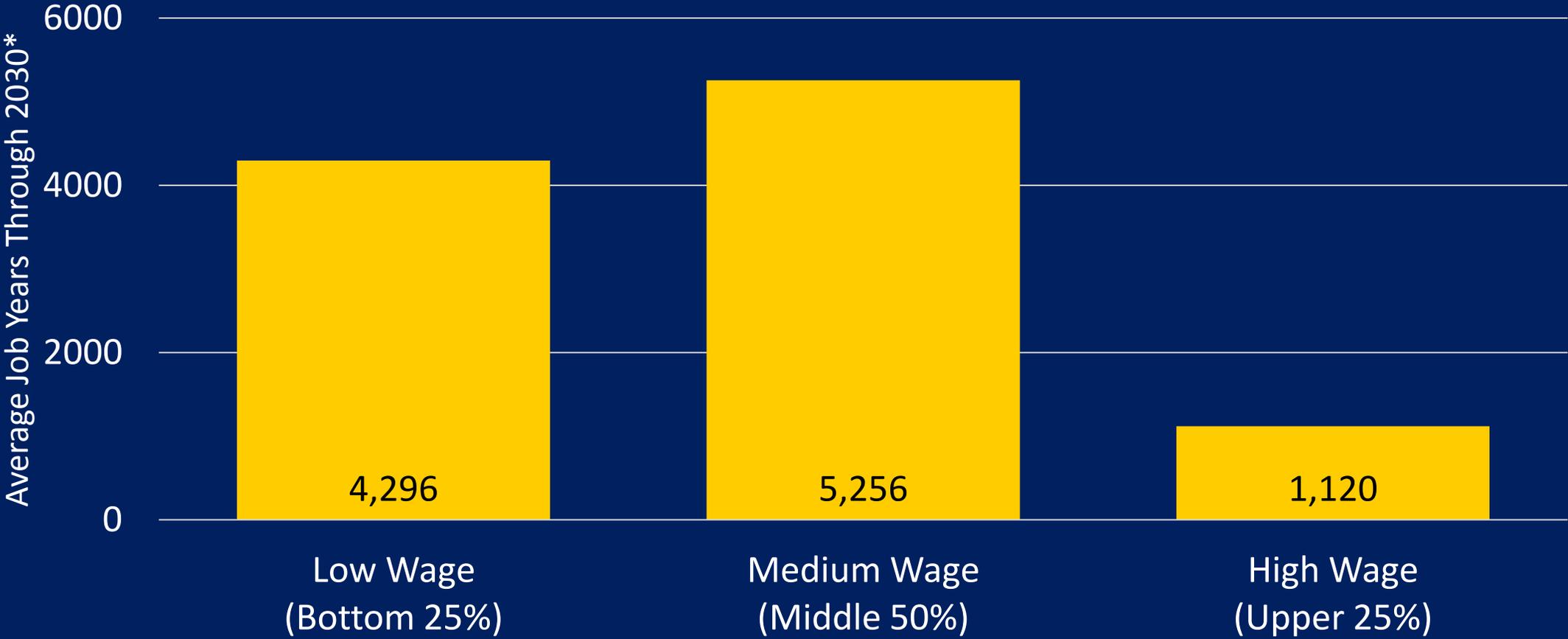


*Difference between policy scenario three and reference case

Where Do These Jobs Come From?

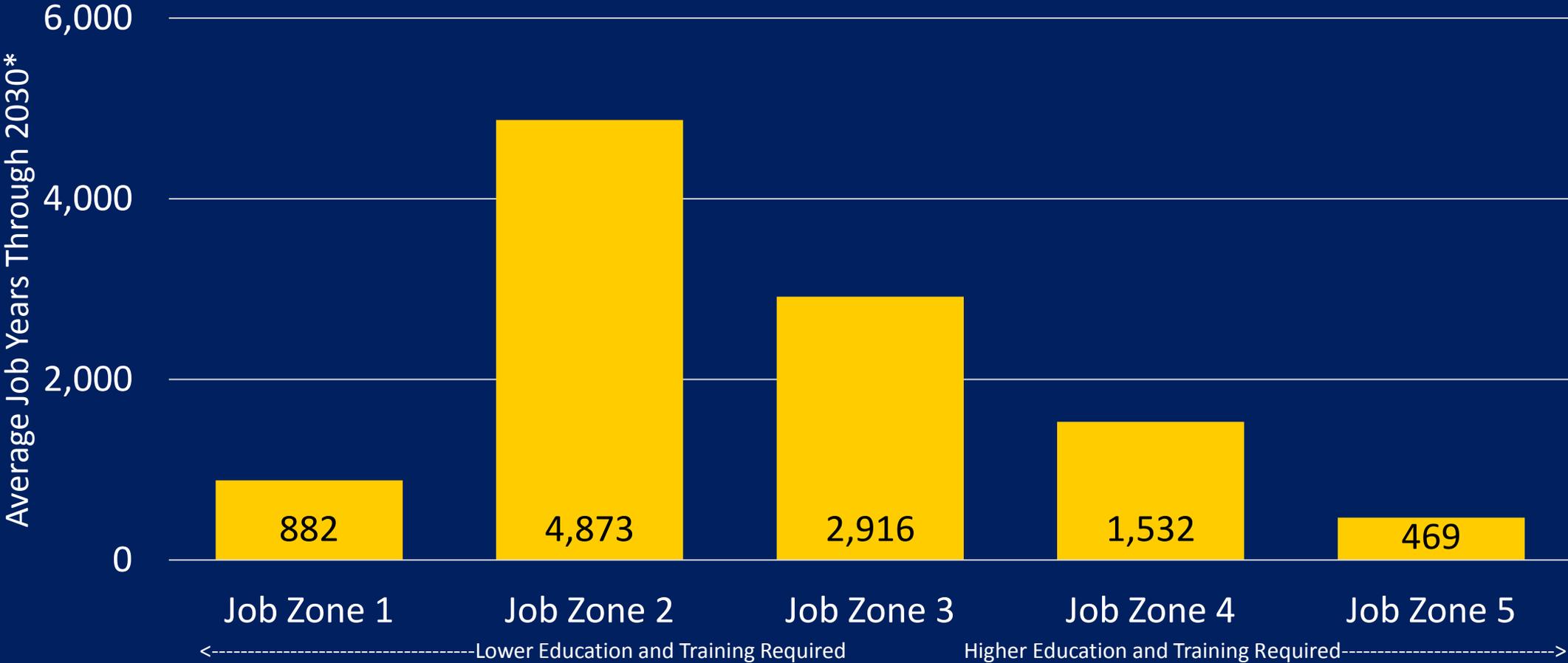
- Mitigation Spending
 - Significant spending on transportation measures between 2019 and 2024 creates roughly 5,000 jobs each year.
- Transfer Effect
 - The carbon fee reduces profits of industries that have relatively low employment in-state (utilities and petroleum manufacturing)
 - Revenue reinvestment tends to stay within Maryland
 - Consumer rebates
 - Construction
 - Government Spending

Job Gains Are Primarily in Low- and Medium-Wage Jobs



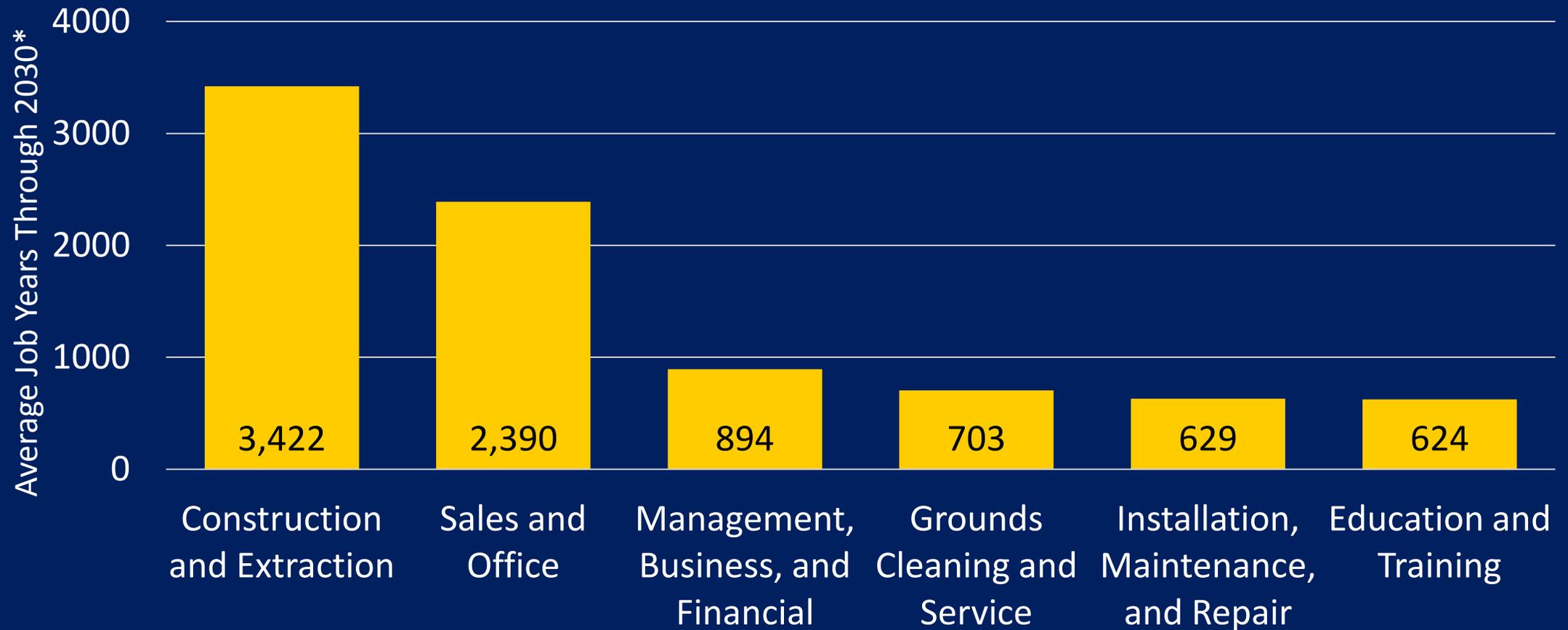
*Difference between policy scenario three and reference case on average through 2030

Job Gains Through 2030 Typically Require Lower Levels of Education



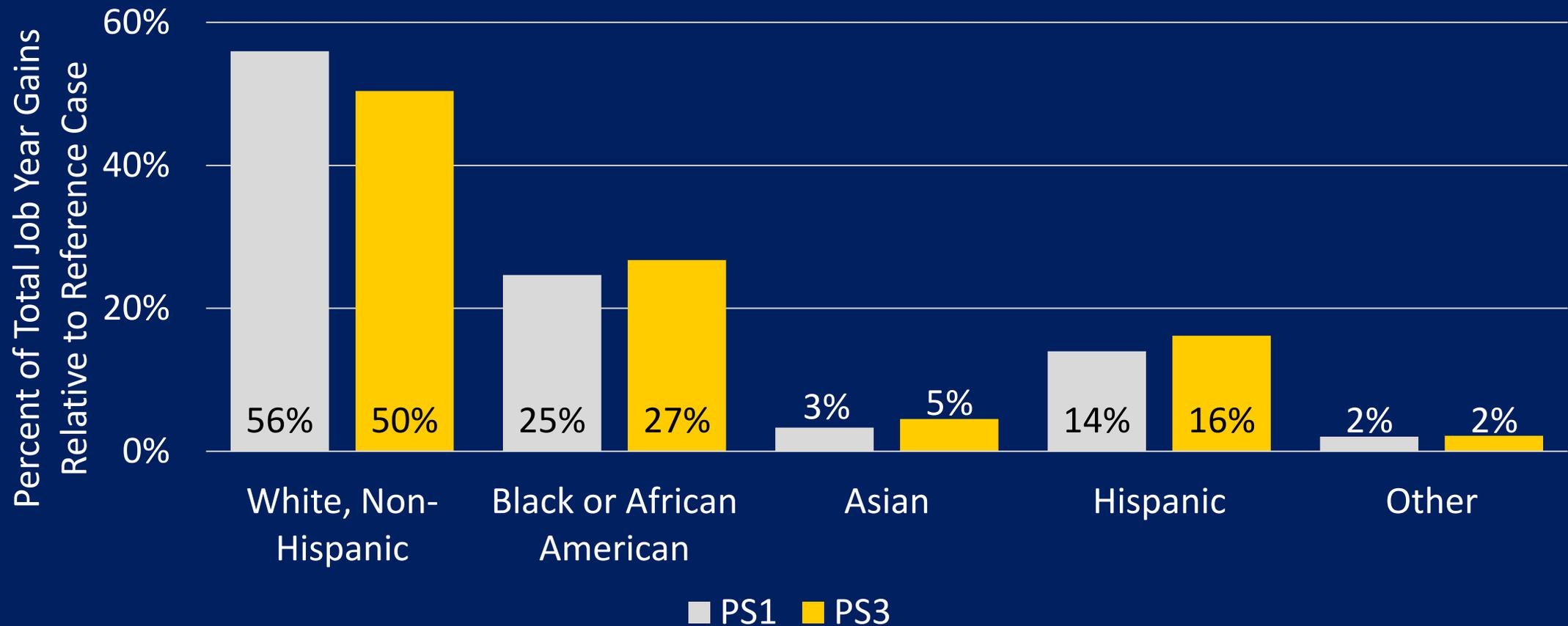
*Difference between policy scenario three and reference case on average through 2030

80% of Job Gains Relative to the Reference Case are in Six Major Occupation Groups



*Difference between policy scenario three and reference case on average through 2030

The Distribution of Job Gains Across Racial and Ethnic Groups is Slightly More Diverse Than in Policy Scenario One



Policy Scenario	Achieve 2020 Emissions Goal?	Achieve 2030 Emissions Goal?	Achieve 2050 Emissions Goal?	Achieve Economic Goal?
Scenario One	✓			✓
Scenario Three	✓	✓		✓

Questions?

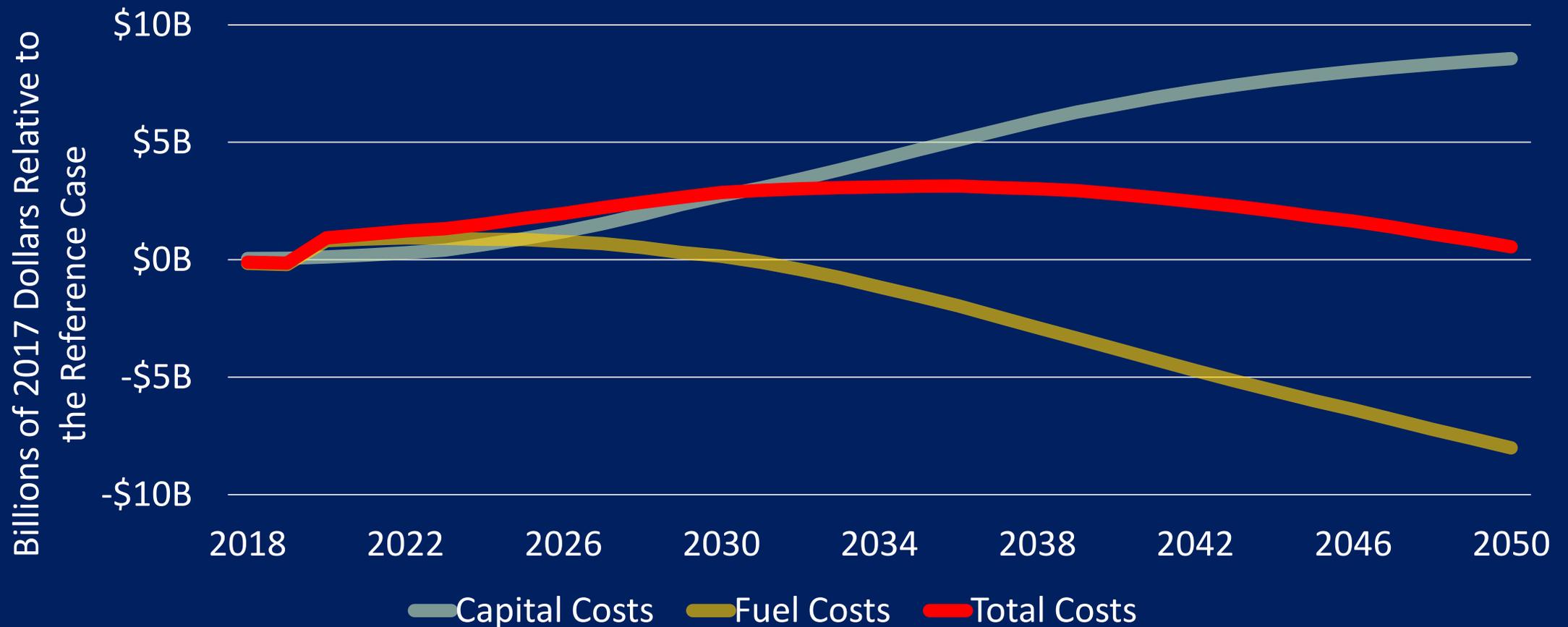
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Appendix

Economy-Wide, Investment Costs Outpace Fuel Savings Through 2050.



For Consumers, Fuel Cost Savings Outweigh Investment Spending By 2045

